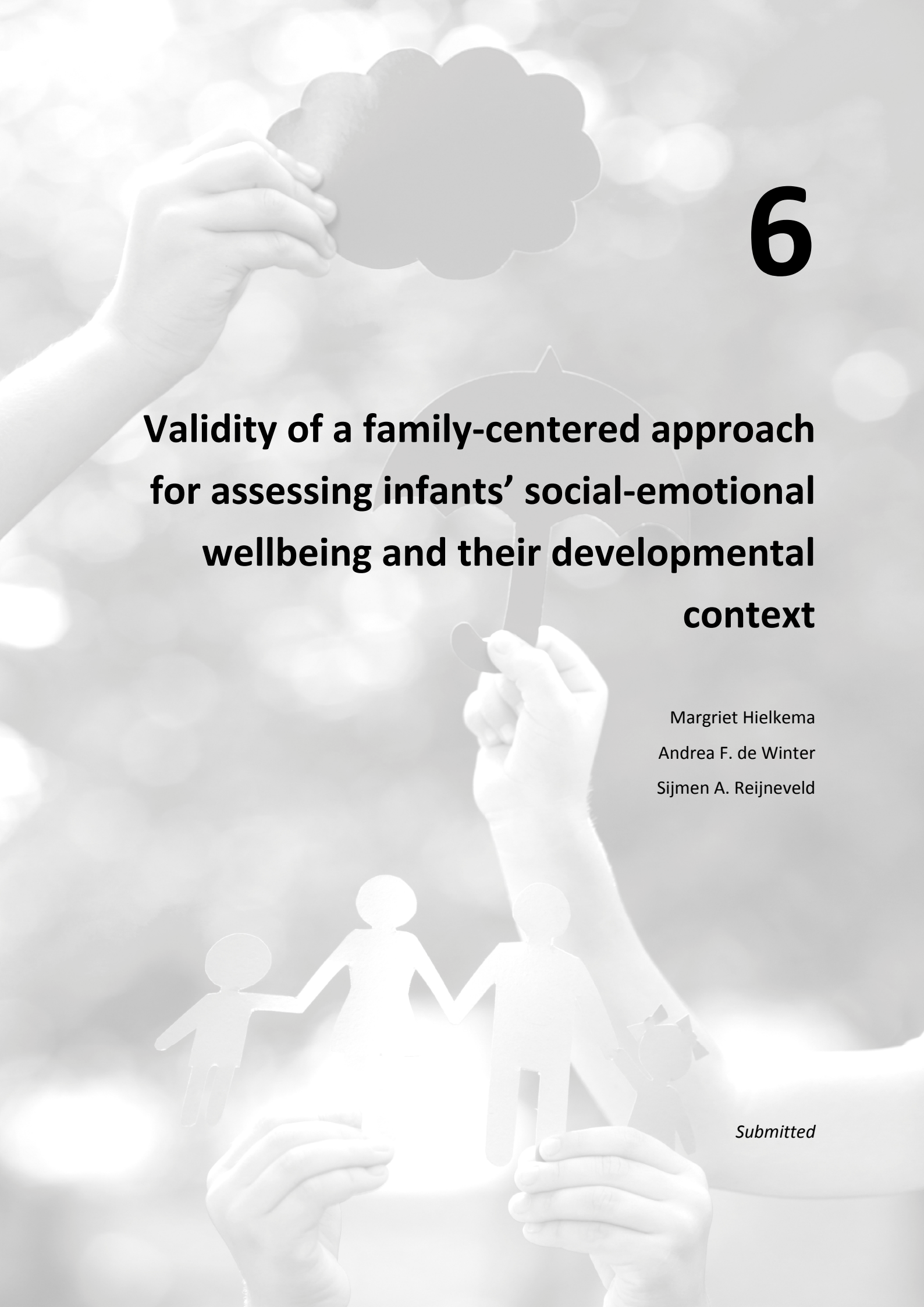
The value of a family-centered approach in preventive child healthcare

Hielkema, Margriet



6

Validity of a family-centered approach for assessing infants' social-emotional wellbeing and their developmental context

Margriet Hielkema
Andrea F. de Winter
Sijmen A. Reijneveld

Submitted

ABSTRACT

Background: Family-centered care seems promising in preventive pediatrics, but evidence on whether this type of care can validly be used to identify risks regarding infants' social-emotional wellbeing lacks. We aimed to examine the validity of such a family-centered approach.

Methods: We conducted a prospective cohort study. During routine well-child visits (2-15 months), Preventive Child Healthcare (PCH) professionals used a family-centered approach and assessed domains on *parents' competence, role of the partner, social support, barriers within the care-giving context,* and *child's wellbeing* for 2,976 children as protective, indistinct or a risk. If an intervention was needed, based on the overall assessment (cases, N=94), parents filled in validated questionnaires covering the aforementioned domains. These questionnaires served as gold standards. For each case, two controls, matched by child-age and gender, did so too (N=184). We compared PCH professionals' assessments with the parent-reported gold standards. Moreover, we evaluated which domain mostly contributed to the overall assessment.

Results: Pearson's correlation coefficients between PCH professionals' assessments and gold standards were overall reasonable (Pearson's r 0.17 - 0.51) except for the domain *barriers within the care-giving context.* Scores on gold standards were significantly higher when PCH assessments were rated as "at risk" (overall and per domain).We found reasonable to excellent agreement regarding the absence of risk factors (negative agreement rate: 0.38 - 0.99), but lower agreement regarding the presence of risk factors (positive agreement rate: 0.00 - 0.68). An "at risk" assessment for the domain *role of the partner* contributed most to being overall at risk, i.e. a case, odds ratio 87.0, 95%-confidence interval: 20.2 - 375.0.

Conclusion: Findings partially support the convergent validity of a family-centered approach in well-child care to assess infants' social-emotional wellbeing and their developmental context. Agreement was reasonable to excellent regarding protective factors, but lower regarding risk factors.

Background

A child's development is influenced by the context in which it grows up, in addition to for example biological factors.[1] On the one hand, a positive and supportive context may optimize a child's development -within the possibilities of its genetic and biological make-up-. For example adequate parenting has been related to positive outcomes.[2,3] On the other hand, a less favorable context, like with marital conflict, maternal depression, or poverty, may negatively influence a child's development.[4,5] Especially the development of young children is intertwined with their developmental context. The younger children are, the more they rely on their developmental context for the regulation of emotions and behavior.[6]

Family-centered care may help to optimize a child's developmental context and in turn the child's social-emotional development[7] and has also been recognized as important for the quality of preventive pediatrics, as reflected by guidelines like Bright Futures of the American Academy of Pediatrics.[8] Box 1 presents the core principles of Family-centered care according to the American Academy of Pediatrics.[9] In the Netherlands, a family-centered approach, further referred to as the family-centered approach, has been introduced in Preventive Child Healthcare (PCH) to monitor children's social-emotional development and their developmental context.[10] PCH is equivalent to well-child care in other countries, concerning only preventive activities, and is offered free of charge to the total Dutch population. More than 90% of all families with children frequently visit PCH, and monitoring social-emotional development in children is one of the mandatory tasks of PCH.

The newly implemented family-centered approach aims to build a trustful and supportive relationship with parents and to empower parenting skills, in order to enhance children's developmental context. Furthermore, the family-centered approach incorporates a screening element as it aims to identify risk and protective factors for infants' social-emotional development by using a checklist with questions.[10] Contents of the checklist are based on the bio-ecological model of Bronfenbrenner, which describes what factors at different levels influence human development, taking into account both the child itself as well as its developmental context and the interaction between the two[11]. In the family-centered approach, this bio-ecological model is reflected by the following domains which are related to children's social-emotional wellbeing: *competence of the parent, role of the partner, social support, life events within the care giving context, and wellbeing of the child*. Based on all domains, PCH professionals come to an overall conclusion about the child's social-emotional wellbeing.

Box 1 Core principles of family-centered care according to the American Academy of Pediatrics

1. Respecting each child and his or her family
2. Honoring racial, ethnic, cultural, and socioeconomic diversity and its effect on the family's experience and perception of care
3. Recognizing and building on the strengths of each child and family, even in difficult and challenging situations and respecting different methods of coping
4. Supporting and facilitating choice for the child and family about approaches to care and support
5. Ensuring flexibility in organizational policies, procedures, and provider practices so services can be tailored to the needs, beliefs, and cultural values of each child and family
6. Sharing honest and unbiased information with families on an ongoing basis and in ways they find useful and affirming
7. Providing and/or ensuring formal and informal support (eg, family-to-family support) for the child and parent(s) and/or guardian(s) during pregnancy, childbirth, infancy, childhood, adolescence, and young adulthood
8. Collaborating with families at all levels of health care, in the care of the individual child and in professional education, policy making, and program development
9. Empowering each child and family to discover their own strengths, build confidence, and make choices and decisions about their health

The family-centered approach seems promising for preventive pediatrics. However, evidence lacks on whether with this family-centered approach, protective and risk factors regarding infants' social-emotional development can validly be assessed in well-child care. Therefore, the aim of this study was to examine the validity of this family-centered approach for monitoring infants' social-emotional development and their developmental context in Preventive Child Healthcare, and the agreement between PCH professional's assessments and validated questionnaires that were filled in by parents.

Methods

The current study was part of a large quasi-experimental study in which the family-centered approach was compared to care-as-usual in Dutch PCH. For the current study, we used only data of participants from the family-centered condition because we wanted to assess its performance in a population that was fully offered this approach. The study was approved by the Medical Ethics Committee of the University Medical Center Groningen. Below, we summarize its design; further details have been described in a separate design paper.[12]

Participants

We used data from a cohort of 2,976 participants from the family-centered condition that gave written informed consent at the start of the study, when their child was around 2 months old. At that same time parents were informed about the possibility that they would be asked to participate in an extra interview in case PCH professionals provided any extra care regarding the infants' social-emotional development. Of the 2,976 participants, 114 were asked by PCH professionals, i.e. nurses and medical doctors, to participate in such an interview because an additional activity regarding the child's social-emotional development was needed (e.g., an additional phone call, appointment or extra well-child visit to assess the situation more in depth, or an intervention like a referral to a child psychologist); 87 parents (76%) agreed on this. Three families were seen twice as a case and two families three times, since during the period from 2-18 months an additional activity from PCH was needed more than once. This led to 94 cases in total. For all cases, two families, matched by age and gender of the child, were invited for whom PCH performed no additional activity ("controls"). Of 4 of the 188 controls, data could not be used because data lacked in their medical records regarding the family-centered approach.

Intervention and procedures

The family-centered approach covers five domains associated with children's social-emotional development (see Appendix 1 for the domains and questions regarding these domains).[10] The questions for each domain form a guideline for PCH professionals for their conversation with parents. PCH professionals used the family-centered approach during each routine well-child visit at the child age of 2, 3, 4, 6, 9, 11, and 14 months. For each domain, PCH professionals registered information within the child's medical record as *not discussed, protective, indistinct*, or a *risk*. In this, *protective* reflected either a stable or enhancing situation, for both high- and low-risk children, i.e. conform the use of promotive factors as previously described by Sameroff[13], whereas *indistinct* reflected that a situation is not *protective* nor could be labeled as a *risk*. Subsequently an explanation in free text could be provided. Based on the appraisal of all the domains, the parent and the PCH professional jointly decided whether there were any concerns, resulting in the overall conclusion as *fine*, *not optimal* or a *problem*. If there were any concerns, an additional activity was planned aimed at the social-emotional development of the child, for example an additional appointment to assess the situation more in depth or an intervention like a referral to a child psychologist.

All PCH professionals attended 4 days of training before starting with the family-centered approach. Within one month after training they had to videotape two well-child visits in which they used the family-centered approach. The videos were discussed with trainers and had to be rated as sufficient by a trainer using standardized guidelines.[10] This procedure was repeated until the performance of the family-centered approach was rated as adequate. Furthermore, PCH professionals attended supervision every three months. Before our study started, we trained all PCH professionals for half a day providing practical as well as theoretical information on the study for example on how to include participants and how to provide cases for the study.

All cases and controls were contacted by a trained interviewer from the research institute for an interview at the parents' home, five families preferred filling in the questionnaire themselves and were mailed. Appointments were made within one week after the routine well-child visit, whenever feasible. 53% of the interviews took place within one week after the well-child visit, for intervals longer than one week, we checked possible changes with PCH professionals, since the situation might have changed during the time interval between the well-child visit and the interview.

Measures

PCH professionals registered outcomes of the family-centered approach with respect to separate domains as *not discussed, protective, indistinct*, or a *risk* and overall conclusions as *fine, not optimal* or *a problem*, as we described before under the heading of "Procedures". By means of an interview, parents filled out questionnaires with good construct and/or criterion validity. These questionnaires served as gold standard for each of the family-centered approach domains. These questionnaires are listed in Table 1.

If specific ratings were missing for controls, these were substituted by those of the subsequent visit. This was done only if that rating contained a note that nothing had changed since the previous visit.. Furthermore, for both controls and cases, in case of missing conclusions on domains, they were coded as *protective* if free text explicitly stated that everything was fine and as *indistinct* if free text stated that problems or barriers existed. For 44 controls and 15 cases we coded one or more domains according to the above stated procedure.

Moreover, we assessed the following background characteristics of parents: *age, educational level, working participation, country of birth* and furthermore the *family composition*, and having *one or more children.* We used this information from the child's medical record or, if records lacked data on this, from the parent reported questionnaire at the start of our study. Educational level reflected the highest obtained level for one of

both parents and was divided into low (primary school or less, lower vocational or lower general secondary education), medium (intermediate vocational education, intermediate or higher secondary education) and high (higher vocational education or university).

Analysis

Analyses were performed using the Statistical Package for Social Sciences (SPSS) version 20. The statistical significance level was set on .05. We first compared background characteristics of cases and controls by using Chi-square tests or Fisher's exact tests in case of more than 20% of cells with an expected count <5.

Second, we assessed the convergent validity by computing Pearson correlation coefficients between PCH professionals' assessments and gold standards regarding the domains of the family-centered approach. Correlation coefficients >.30 were interpreted as reasonable.[14] Additionally, we compared scores on the gold standards for cases versus controls, i.e. PCH-initiated intervention versus no intervention and per domain (assessed as at risk versus assessed as not at risk). For these comparisons we used independent t-tests or Mann-Whitney tests in case of skewed data and we calculated effect sizes. Effect sizes of 0.10-0.30 were interpreted as small, 0.30-0.50 as medium and >0.50 as large.[15]

Third, we assessed the agreement between PCH professionals' assessments and gold standards regarding the domains of the family-centered approach. We calculated percentages of agreement overall, and for cases and controls separately. Furthermore, we calculated both the positive agreement (Ppos), i.e. the agreement regarding the presence of risk factors, and negative agreement (Pneg), i.e. the agreement on the absence of risk factors, for a better understanding of our results.[16] For this purpose, we used the dichotomized scores of PCH professionals' assessments as *protective* versus *indistinct* or a *risk* per domain, and questionnaire scores into low and high scores. We based this latter dichotomization on the scores of controls; high scores were defined as more than two standard deviations higher than the mean, or, in case of skewed data, as higher than the 90th percentile. Whenever norm scores were available for a questionnaire, we also dichotomized our data based on these.

Finally, we assessed which domains mostly contributed to PCH professionals' overall assessments by calculating the percentages of risk assessments per domain for both cases and controls and performing logistic regression analysis.

Table 1 Parent-report questionnaires used as gold standards for the domains of the family-centered care approach

Domain of the Family-centered approach	Criterion	Nr. of items	Measuring	Information on reliability and validity (*and Cronbach's alpha in our study*)	Cut-off scores	References
Wellbeing of the child	Ages and Stages Questionnaire Social Emotional (*ASQ-SE*) (versions 6, 12 and 18 months)	22-29	Social-emotional development of the child	Cronbach's alpha 0.82. Test-retest reliability 0.94. Sensitivity 0.75 - 0.89. Specificity 0.82 - 0.96. *(0.41-0.69)*	High > 2 sd	17
Competence of the parent	Dutch Parenting Stress Index (*PSI*) (4 subscales)	11	Parental competence and attachment	Cronbach's alpha 0.92-0.96. Good construct and criterion validity* *(0.82)*	High > 90th pct	18
	Parenting Tasks Checklist or Problem Setting and Behavior Checklist *(PSBC)(Setting Self-Efficacy subscale)*	14	Perceived ability of the primary caretaker in mastering problem situations	Cronbach's alpha 0.91 *(0.89)*	Low < 10th pct	19
	Parental Sense of Competence scale (*PSOC*)	16	Competence of the parent	Cronbach's alpha 0.70-0.88. Test-retest reliability 0.46- 0.82. Good construct validity. *(0.84)*	High: >2 sd	20
	SF-12 Health Survey *SF-12 mental* *SF-12 physical*	12	Health status (physical and mental) of the parent	Abbreviated version of the validated 36-Item Short Form Health Survey. Correlations betwee SF-36 and SF-12 are high , i.e.0.94–0.97 *(0.67-0.71)*	Low: <10th pct Low: <10th pct	21

Table 1 continued

Domain of the Family-centered approach	Criterion	Nr. of items	Measuring	Information on reliability and validity (*and Cronbach's alpha in our study*)	Cut-off scores	References
Role of the partner	McMaster Family Assessment Device (*FAD*) (General Functioning)	12	Emotional relationships within families	Cronbach's alpha 0.66-0.81.Good construct validity. *(0.94)*	High: >90th pct	22
	Dutch Parental Stress Index (*PSI*) (subscale partner)	5	Having a child and its effect on the relationship between partners	Cronbach's alpha 0.92-0.96. Good construct and criterion validity* *(0.71)*	High: >90th pct	18
Social support	Social Support List, short version (*SSL*) *Received* *Shortage*	12	Social support	Cronbach's alpha 0.69-0.96, Construct and criterion validity sufficient* *(0.74-0.79)*	Low: <2 sd High: >90th pct	23
	Loneliness-score Social Emotional	11	Feelings of overall, emotional and social loneliness	Cronbach's alpha 0.80-0.90. sufficient content validity. *(0.80-0.85)*	High: >90th pct High: >90th pct High: >90th pct	24
Perceived barriers or life events within the care giving context of the child	Questionnaire on the material or social deprivation of a child due to shortage of money (*deprivation questionnaire)*	15	The material or social deprivation of a child due to shortage of money	Cronbach's alpha 0. 89. *(0.63)*	High: > 90th pct	25
	Dutch Parental Stress Index (*PSI*)(subscale life events)	17	Life events happened in the past year	Cronbach's alpha 0.92-0.96. Good construct and criterion validity*	High: >2 sd	18

Sd: standard deviation , Pct: percentile

Results

Background characteristics of both cases and controls are presented in Table 2. Regarding cases, mothers were more often below 20 years or over 40 years of age. Furthermore cases came more often from a one-parent household and parents had a lower educational level.

Table 2: Background characteristics of participants

	Cases (N= 87)	**Controls** (N=184)	**Total cohort*** (N=2835)	**P-value cases-controls/ cases-total cohort**
Gender				
Male	46 (52.9%)	94 (51.1%)	1420 (50.1%)	.78/
Female	41 (47.1%)	90 (48.9%)	1414 (49.9%)	.61
Highest educational level of either parent				
Lower	4 (4.8%)	4 (2.2%)	119 (4.7%)	.03/
Secondary	44 (57.9%)	80 (44.2%)	1099 (43.0%)	.03
Higher	28 (36.8%)	97 (53.6%)	1336 (52.3%)	
Parental age				
Mother				
Younger than 20	2 (2.3%)	1 (0.5%)	15 (0.6%)	.02ª/
20-40	81 (93.1%)	181 (98.9%)	2351 (96.6%)	.05ª
40 years and over	4 (4.6%)	1 (0.5%)	59 (2.4%)	
Father				
Younger than 20	1 (1.2%)	1 (0.6%)	5 (0.2%)	.47ª/
20-40	70 (81.4%)	152 (85.9%)	2092 (89.6%)	.03
40 years and over	15 (17.4%)	24 (13.6%)	239 (10.2%)	
Employment status parent				
One of both or both parents have	85 (97.7%)	179 (97.8%)	1206 (94.4%)	1.00ª/ .23ª
paid work	2 (2.3%)	4 (2.2%)	72 (5.6%)	
None of both parents has paid Work				
Country of birth parent				
One or both born in the Netherlands	86 (98.9%)	181 (100.0%)	2460 (99.3%)	.33ª/
Both born outside the Netherlands	1 (1.1%)	0 (0.0%)	86 (0.7%)	.48ª
Family composition				
Two parents household	79 (92.9%)	183 (99.5%)	2046 (96.9%)	.01ª/
One parent household	6 (7.1%)	1 (0.5%)	65 (3.1%)	.05ª
Number of children				
First child	36 (42.9%)	90 (48.9%)	1215 (42.9%)	.36/
More children	48 (57.1%)	94 (51.1%)	1620 (55.3%)	1.00

ªbased on Fisher's exact test, *participants for whom data was available, cases excluded

Convergent validity

Table 3 shows the Pearson correlations between domains rated as *protective* versus *indistinct* or *at risk* and scores on the related questionnaires. Correlations were all statistically significant (ranging from .17 to .51 with two third >.30) and highest for the domains that the questionnaire should cover, except for the PSBC, the Loneliness score Emotional and the Deprivation Questionnaire.

Scores on the parent-reported questionnaires were mostly higher for children for whom PCH professionals initiated an intervention (cases) than for children for whom they did not so (controls); see mean scores in Table 3). Effect sizes ranged from marginal to medium. We found similar effect sizes for the PCH professionals' conclusions per domain *protective* versus *indistinct* or *at risk*.

Agreement between PCH professionals and parents per domain

Table 4 shows findings regarding the agreement between PCH professionals and parents per domain, for cases and controls separately and combined. Overall, we found reasonable to excellent levels of agreement. For controls agreement was high (88%-96%), whereas for cases this was lower (26%-76%). The agreement on the absence of risk factors (Pneg), which in this study indicated the presence of protective factors (see "intervention and procedures"), was overall satisfactory, and was especially high for controls. The agreement on the presence of risk factors (Ppos) was low (lowest for controls). For cases, PCH professionals frequently identified a risk where parents scored low on the accompanying questionnaires whereas the discrepancy 'professional: protective'; 'parent: risk' occurred more frequently among controls.

Table 3: Comparison of scores on parent-reported questionnaires (i.e. gold standards) between cases and controls

	Cases (intervention based on overall assessment)			Controls (no intervention based on overall assessment)					
	N	**Mean**	**(sd)**	**N**	**Mean**	**(sd)**	**P-value**	**Effect size r**	**Pearson correlation coefficient**
Wellbeing of the child									
ASQ-SE	91	**0.44^**	(1.1)	176	**-0.23^**	(.83)	<.001	.30	-.403***
Competence of the parent									
PSI	93	**23.3**	(8.8)	181	**18.3**	(5.3)	<.001ª	.29ª	-.356***
PSOC	92	**36.3**	(10.6)	179	**30.2**	(7.0)	<.001	.33	-.310***
PSBCº	94	**8.8**	(1.0)	184	**9.1**	(0.8)	.004ª	.17ª	.200***ϕ
SF-12 mentalº	94	**44.3**	(10.9)	184	**53.0**	(7.8)	<.001ª	.43ª	.408***
SF-12 physicalº	94	**49.9**	(8.5)	184	**50.3**	(8.6)	.64ª	.03ª	.191***
Partner									
FAD	88	**21.3**	(10.0)	179	**15.4**	(3.6)	<.001ª	.37ª	-.508***
PSI (partner)	84	**9.7**	(3.1)	184	**7.6**	(2.3)	<.001ª	.32 ª	-.321***
Social support									
SSL receivedº	94	**15.3**	(3.1)	184	**15.7**	(2.7)	.19	.08	.240***
SSL shortage	93	**8.3**	(3.0)	184	**6.8**	(1.3)	<.001ª	.24ª	-.414***
Loneliness score	94	**2.7**	(3.0)	184	**1.0**	(1.9)	<.001ª	.36ª	-.457***
Social	94	**1.1**	(1.5)	184	**0.5**	(1.0)	.002 ª	.19ª	-.374***
Emotional	94	**1.7**	(1.8)	184	**0.5**	(1.2)	<.001ª	.40ª	-.441***ϕ
Barriers or life events within care-giving context									
Deprivation Questionnaire	93	**0.5**	(1.4)	183	**0.1**	(0.3)	.001ª	.20ª	-.282***ϕ
PSI (life events)	94	**1.5**	(1.0)	184	**1.3**	(1.0)	.15	.09	-.172**

ª Based on Mann-Whitney test , ^ Based on Z-scores, º Lower scores reflect worse outcomes, * Pearson correlation between questionnaire and the corresponding domain (rated as *at risk* versus *protective*) , ϕ Pearson correlation was higher between the questionnaire scores and one of the other domains than with the intended corresponding domain, ** *p*-value < .05, *** *p*-value <.01

Table 4: Agreement between assessments of PCH professionals and scores on parent-reported gold standards per domain

PCH-professional / parent	N	risk*/ risk	risk*/ protective	protective/ risk	protective/ protective	Agreement	Ppos	Pneg
Wellbeing of the child								
ASQ-SE	253	6	44	0	203	83%	.21	.90
Cases/ Controls	89/ 164	5/ 1	39/ 5	0/ 0	45/ 158	56%/ 97%	.20/ .29	.70/ .98
Competence of the parent								
PSI	269	23	37	21	188	78%	.44	.87
Cases/ Controls	91/ 178	20/ 3	33/ 4	9/ 12	29/ 159	54%/ 91%	.49/ .27	.58/ .95
PSOC	266	14	47	10	195	79%	.33	.87
Cases/ Controls	90/ 176	14/ 0	40/ 7	5/ 5	31/ 164	50%/ 93%	.38/ .00	.58/ .96
PSBC	273	15	46	23	189	75%	.30	.85
Cases/ Controls	92/ 181	13/ 2	41/ 5	8/ 15	30/ 159	47%/ 89%	.35/ .17	.55/ .94
SF-12 mental	273	25	36	24	188	78%	.45	.86
Cases/ Controls	92/ 181	21/ 4	33/ 3	11/ 13	27/ 161	52%/ 91%	.49/ .33	.55/ .95
SF-12 physical	273	9	52	18	194	74%	.20	.85
Cases/ Controls	92/ 181	7/ 2	47/ 5	2/ 16	36/ 158	47%/ 88%	.22/ .16	.60/ .94
Role of the partner								
FAD	221	26	15	23	157	83%	.57	.89
Cases/ Controls	77/ 144	26/ 0	13/ 2	11/ 12	27/ 130	69%/ 90%	.68/ .00	.69/ .95
PSI (partner)	222	18	19	27	158	79%	.44	.87
Cases/ Controls	73/149	17/ 1	18/ 1	14/ 13	24/ 134	56%/ 91%	.52/ .13	.60/ .95

Table 4 continued

PCH-professional / parent	N	risk*/ risk	risk*/ protective	protective/ risk	protective/ protective	Agreement	Ppos	Pneg
Social support								
SSL received	221	4	25	0	192	88%	.24	.94
Cases/ Controls	75/ 146	4/ 0	21/ 4	0/ 0	50/ 142	72%/ 97 %	28./ .00	83./ .99
SSL shortage	221	15	14	20	172	85%	.47	.91
Cases/ Controls	75/ 146	13/ 2	12/ 2	11/ 9	39/ 133	69%/ 92%	.53/ .27	.77/ .96
Loneliness score	221	15	14	14	178	87%	.52	.93
Cases/ Controls	75/ 146	13/ 2	12/ 2	6/ 8	44/ 134	76%/ 93%	.59/ .29	.83/ .96
Social	221	10	19	9	183	87%	.42	.93
Cases/ Controls	75/ 146	9/ 1	16/ 3	4/ 5	46/ 137	73%/ 95%	.47/ .20	.82/ .97
Emotional	221	15	14	17	175	86%	.49	.92
Cases/ Controls	75/ 146	13/ 2	12/ 2	8/ 9	42/ 133	73%/ 92%	.56/ .27	.81/ .96
Perceived barriers or life events within the care giving context								
Deprivation questionnaire	218	12	51	9	146	72%	.28	.83
Cases/ Controls	67/ 151	12/ 0	40/ 11	0/ 9	15/ 133	40%/ 88%	.38/ .00	.43/ .93
PSI (life events)	219	3	60	3	153	71%	.09	.83
Cases/ Controls	67/ 152	3/ 0	49/ 11	0/ 3	15/ 138	26%/ 91%	.11/ .00	.38/ .95

*Consists of domains assessed as a risk or indistinct
PCH: Preventive Child Healthcare
Ppos: positive agreement (on the presence of risk factors)
Pneg: negative agreement (on the absence of risk factors, in this study indicating the presence of protective factors)

Contribution of domains to the PCH professional's overall assessment

Table 5 shows the rates of at risk and protective factors per domain that PCH professionals assessed, for cases versus controls, and the results of the univariate logistic regression analysis. The domain *Role of the partner* contributed the most to the overall assessment; if this domain was assessed as at risk, participants had an odds of about 20 to 375 to be assessed as a case, compared to when this domain was assessed as protective. Furthermore, when participants had two or more risk factors, they had a higher odds of being assessed as a case (odds ratio: 91.5; 95% confidence interval: 31.1-269.3).

Table 5: Contribution of domains to the overall assessment of the child by the PCH professional

	Cases (intervention based on overall assessment)	**Controls** (no intervention based on overall assessment)	**Outcomes logistic regression analysis** **OR (95% CI)**
Wellbeing of the child			
Risk or indistinct	46 (50%)	6 (3.5%)	27.7 (11.1-68.8)
Protective	46 (50%)	166 (96.5%)	
Competence of the parent			
Risk or indistinct	54 (58.7%)	7 (3.9%)	35.3 (14.9-83.6)
Protective	38(41.3%)	174 (96.1%)	
Role of the partner			
Risk or indistinct	45 (54.2%)	2 (1.3%)	87.0 (20.2-375.0)
Protective	38 (45.8.%)	147 (98.7%)	
Social support			
Risk or indistinct	25 (33.3%)	4 (2.7%)	17.8 (5.9-53.5)
Protective	50 (66.7%)	142 (97.3%)	
Barriers or life events within the care giving context			
Risk or indistinct	52 (77.6%)	11 (7.2%)	44.4 (19.2-103.0)
Protective	15 (22.4%)	141 (92.8%)	

OR: odds ratio
CI: confidence interval

Discussion

In this study we examined the validity of a family-centered approach for the early identification of concerns regarding infants' social-emotional development, in well-child care. Results showed that PCH professionals' assessments of infants' social-emotional wellbeing and their developmental context, based on a family-centered approach, were

associated with scores on gold standards. The agreement between PCH and parents per domain was overall satisfactory to excellent for protective factors, but not for risk factors. The domain *Role of the partner* contributed most to the PCH professional's overall assessment of being at risk. This domain was among the most valid ones.

Our study was the first to assess the validity of a family-centered approach in this extensive way. Findings partially support its validity. This fits with previous findings on the validity of this specific approach[10],and with findings on a similar approach, i.e. the Structured Problem Analysis of Raising Kids (SPARK), which also showed only partial support for the validity.[26] However, our study covered more areas than only child development, family stress and family needs, making it hard to compare findings in full.

We found that the agreement on protective factors was satisfactory to very good, especially for controls, but this was not always the case for risk factors. This finding suggests that the family-centered approach does not fully facilitate PCH professionals to better assess risk factors. This is in line with previous findings of suboptimal identification by PCH of risk factors such as child abuse and psychosocial problems[27,28]. Reasons for a suboptimal identification of risk factors could be the limited amount of time during well-child visits,[29] or an insufficient training to detect social-emotional problems. Moreover, at infant age the identification of social-emotional problems may be more difficult.[30]

Alternatively, the lower agreement regarding risk factors compared to protective factors may also reflect the daily practice. First, PCH professionals frequently assessed risk factors, whereas parents did not (yet), which we found for cases. This may be the result of the preventive task of PCH and the family-centered approach, i.e. aiming to identify risks at an early stage to prevent (worsening of) problems whenever possible. The focus on risk factors may however entail the risk of stigmatization, and might interfere with the advocated empowering approach of the family-centered approach.[10]

Second, PCH professionals also registered protective factors in some instances where parents scored high on the accompanying questionnaires, especially for controls. This may be due to PCH taking into account both protective and risk factors, and having the knowledge that protective factors can counterbalance risk factors. Alternatively, it may also be that PCH professionals are reluctant to discuss certain topics with parents and rate domains too easily as protective, or that parents may be reluctant to discuss their worries or problems with PCH professionals. This issue evidently requires further study. If reluctance of parents to discuss is at stake, then more intense training in communication skills and more continuity of PCH professionals might contribute to parents' disclosure.[31]

The domain *Role of the partner* contributed the most to the PCH professionals' overall assessment of being at risk and was also among the most valid domains within our

study. Evidence shows the importance of a positive relationship between parents since marital conflict can be a risk for children's social-emotional development.[4] However, studies also show that not the type of risk factor, but the number of risk factors is most predictive for the outcome, e.g. regarding child behavior.[32] This fits with our findings, since we found that whenever for participants two or more risk factors were assessed, they were more likely to be rated as a case.

Strengths and limitations

Strengths of our study are its high response rates of cases and its embedding in routine care. Moreover, to optimize the coverage of all domains of the family-centered approach, we used a number of well evaluated questionnaires.

Some limitations of our study should be discussed too, however. First, no perfect 'gold standards' were available for the domains of the family-centered approach, which may decrease the validity as measured. Though the questionnaires seem valuable in representing the family-centered approach's domains, some questionnaires only covered a certain aspect of such a domain. Unfortunately, comparing specific questionnaires with specific questions of the family-centered approach was not feasible because data often lacked on these specific questions. Second, we based our findings on single parent-reported questionnaires instead of multi-informant and multi-method assessments. Third, we had to deal with missing values, however, the way we imputed these were in line with the principles of the family-centered approach.

Conclusions

Our findings partially support the validity of a family-centered approach in well-child care. The family-centered approach particularly seems useful to assess protective factors, but to a lesser degree risk factors for infants' social-emotional development. For daily practice, it seems valuable that the family-centered approach facilitates assessment of protective factors, since the importance of building on strengths is recognized in optimizing children's wellbeing.[33] This family-centered approach seems promising to support the development of young children.

References

1. Shonkoff JP, Garner AS, Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, Section on Developmental and Behavioral Pediatrics. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*. 2012;129(1):e232-46.

2. Stewart-Brown SL, Schrader-McMillan A. Parenting for mental health: What does the evidence say we need to do? report of workpackage 2 of the DataPrev project. *Health Promot Int*. 2011;26 Suppl 1:i10-28.

3. George MR, Cummings EM, Davies PT. Positive aspects of fathering and mothering, and children's attachment in kindergarten. *Early Child Dev Care*. 2010;180(1-2):107-119.

4. Cummings EM, Davies PT. Effects of marital conflict on children: Recent advances and emerging themes in process-oriented research. *J Child Psychol Psychiatry*. 2002;43(1):31-63.

5. Spence SH, Najman JM, Bor W, O'Callaghan MJ, Williams GM. Maternal anxiety and depression, poverty and marital relationship factors during early childhood as predictors of anxiety and depressive symptoms in adolescence. *J Child Psychol Psychiatry*. 2002;43(4):457-469.

6. Morris AS, Silk JS, Steinberg L, Myers SS, Robinson LR. The role of the family context in the development of emotion regulation. *Soc Dev*. 2007;16(2):361-388.

7. Dunst CJ, Trivette CM. Meta-analytic structural equation modeling of the influences of family-centered care on parent and child psychological health. *Int J Pediatr*. 2009;2009:576840.

8. Green M, Palfrey JS. *Bright futures: Guidelines for health supervision of infants, children, and adolescents* (2nd ed., rev.). *Arlington, VA: National Center for Education in Maternal and Child Health.* 2002.

9. Committee on Hospital Care. American Academy of Pediatrics. Family-centered care and the pediatrician's role. *Pediatrics*. 2003;112(3 Pt 1):691-697.

10. Tan NJ, Boom van den DC, Hermanns JJM. *Protocol ter ondersteuning van de sociaal-emotionele ontwikkeling. Een volgsysteem voor consultatiebureau's (0-4 jarigen). Ontwikkeld in opdracht van DMO. [A protocol to enhance children's social-emotional wellbeing. A monitoring system for Preventive Child Healthcare (0-4 years).].* University of Amsterdam. Faculty of social and behavioural sciences; 2005.

11. Bronfenbrenner U, Ceci SJ. Nature-nurture reconceptualized in developmental perspective: A bioecological model. *Psychol Rev*. 1994;101(4):568-586.

12. Hielkema M, de Winter AF, de Meer G, Reijneveld SA. Effectiveness of a family-centered method for the early identification of social-emotional and behavioral problems in children: A quasi experimental study. *BMC Public Health*. 2011;11:636.

13. Sameroff AJ. Ecological perspectives on developmental risk. In: Osofsky JD, Fitzgerald HE, eds. *WAIMH Handbook of Infant Mental Health Groups at Risk.* 4th ed. New York: Wiley; 1999:223-248.

14. Hemphill JF. Interpreting the magnitudes of correlation coefficients. *Am Psychol*. 2003;58(1):78-79.

15. Cohen J. A power primer. *Psychol Bull*. 1992;112(1):155-159.

16. Cicchetti DV, Feinstein AR. High agreement but low kappa: II. resolving the paradoxes. *J Clin Epidemiol*. 1990;43(6):551-558.

17. Squires J, Bricker D, Heo K, Twombly E. Identification of social-emotional problems in young children using a parent-completed screening measure. *Early Childhood Research Quarterly*. 2001;16(4):405-419.

18. Brock de AJLL, Vermulst AA, Gerris JRM, Abidin RR. *NOSI-Nijmeegse Ouderlijke Stress Index, Handleiding Experimentele Versie [NOSI-Nijmegen Parenting Stress Index, Manual Experimental Version].* Lisse: Swets en Zeitlinger; 1992.

19. Sanders MR, Woolley ML. The relationship between maternal self-efficacy and parenting practices: Implications for parent training. *Child: Care, Health and Development*. 2005;31(1):65-73.

20. Ohan J, L., Leung DW, Johnston C. The parenting sense of competence scale: Evidence of a stable factor structure and validity. *Canadian Journal of Behavioural Science*. 2000;32(4):251-261.

21. Jenkinson C, Layte R, Jenkinson D, et al. A shorter form health survey: Can the SF-12 replicate results from the SF-36 in longitudinal studies? *J Public Health Med*. 1997;19(2):179-186.

22. Byles J, Byrne C, Boyle MH, Offord DR. Ontario child health study: Reliability and validity of the general functioning subscale of the McMaster family assessment device. *Fam Process*. 1988;27(1):97-104.

23. Sonderen van E. *Sociale Steun Lijst - Interacties En Sociale Steun Lijst - Discrepanties, Een Handleiding. [Social Support List - Interactions and Social Support List - Discrepancies, a Manual.].* Groningen: University of Groningen, Noordelijk Centrum voor Gezondheidswetenschappen; 1993.

24. Jong Gierveld de J, Tilburg van T. Manual of the Loneliness Scale. http://home.fsw.vu.nl/TG.van.Tilburg/manual_loneliness_scale_1999.html. Updated 2011. Accessed February 15, 2015.

25. Rots-de Vries de C. *Rich evidence for poor families exploring the potential of pragmatic-driven intervention research in Preventive Child Healthcare.* Tilburg University; 2010.

26. van Stel HF, Staal II, Hermanns JM, Schrijvers AJ. Validity and reliability of a structured interview for early detection and risk assessment of parenting and developmental problems in young children: A cross-sectional study. *BMC Pediatr*. 2012;12:71-2431-12-71.

27. Reijneveld SA, de Meer G, Wiefferink CH, Crone MR. Detection of child abuse by dutch preventive child-healthcare doctors and nurses: Has it changed? *Child Abuse Negl*. 2008;32(9):831-837.

28. Klein Velderman M, Crone MR, Wiefferink CH, Reijneveld SA. Identification and management of psychosocial problems among toddlers by preventive child health care professionals. *Eur J Public Health*. 2010;20(3):332-338.

29. Honigfeld L, McKay K. Barriers to enhancing practice-based developmental services. *J Dev Behav Pediatr*. 2006;27(1 Suppl):S30-3; discussion S34-7, S50-2.

30. Carter AS, Briggs-Gowan MJ, Davis NO. Assessment of young children's social-emotional development and psychopathology: Recent advances and recommendations for practice. *J Child Psychol Psychiatry*. 2004;45(1):109-134.

31. Wissow LS, Roter DL, Wilson ME. Pediatrician interview style and mothers' disclosure of psychosocial issues. *Pediatrics*. 1994;93(2):289-295.

32. Appleyard K, Egeland B, van Dulmen MH, Sroufe LA. When more is not better: The role of cumulative risk in child behavior outcomes. *J Child Psychol Psychiatry*. 2005;46(3):235-245.

33. Lamb-Parker F, LeBuffe P, Powell G, Halpern E. A strength-based, systemic mental health approach to support children's social and emotional development. *Infants & Young Children*. 2008;21(1):45-55.

Appendix 1: The contents of the family-centered approach

1. Competence of the primary caretaker
- How do you like being a mother (of … children)?
- Does the situation correspond to what you expected?
- Do you feel uncertain or do you have any difficulties with certain aspects of care? If you have, what kind of aspects are these?
- To what extent do you have time for yourself or for other activities?
- How do you think your health is?

Summarizing: the competence of the parent can be concluded as…

2. Role of the partner
- How does your partner feel about having a child?
- To what extent does your partner contribute to the care of your child?
- To what extent are you satisfied with the contribution of your partner?
- To what extent do you and your partner agree on how to raise and care for children?
- What happens if you and your partner do not agree (about how to raise and care for children)?
- How is the relationship between you and your partner in general?
  (in case of no relationship: how do you feel about that?)
- What is the impact of having a child on your relationship?

Summarizing: the role of the partner can be concluded as…

3. Social support
- Who supports you emotionally in caring for your child?
- Who supports you in practical terms in caring for your child?
- Who advises you about caring for your child?
- To what extent do you manage with the support you receive?
- Are you familiar with ways to enlarge your social network?
- To what extent are you in need of contact with other mothers with babies?
- How would you define your relationship with your own parents?

Summarizing: the social support can be concluded as…

4. Perceived barriers or life events within the care-giving context of the child
- Have there been any life events the past year?
  If so: To what extent does this influence your contact with (name of the child)?
- How does the combination of work and child care services work for you?
- How is your financial situation?
- How is your housing situation?
- Are there any other circumstances that impact on your family?

Summarizing: the perceived barriers or life events can be concluded as…

5. Wellbeing of the child
- How is (name of the child) doing overall?
- How is (name of the child) developing on a social-emotional level according to you?
- How familiar are you with (name of the child)?
- How does (name of the child) respond to his/her environment?
- To what extent do you recognize different ways of crying?

Summarizing: the wellbeing of the child can be concluded as…